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ABSTRACT

In 1988, the Johns Hopkins Center for Research on Elementary and Middle Schools conducted a survey of over 1,700 middle school principals. This survey was part of an effort to analyze the content and skills that middle grades students are taught, the instructional methods through which they are taught, and the influences of school, community, and student body characteristics on curriculum and instruction. Course areas surveyed included academic subjects, practical and fine arts, and exploratory courses. Teaching practices surveyed involved basic skills and active learning as they applied to English, mathematics, science, and social studies. School characteristics surveyed included grade organization, and school and class size. Information on the school's community, students' ethnicity, and students' family economic background was also gathered. Analyses of responses indicated that school structure and location, and the economic backgrounds of students, affect the kinds of courses and instruction provided. (BC)

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Center for Research On Elementary & Middle Schools

Report No. 47

February, 1990

OPPORTUNITIES FOR LEARNING: CURRICULUM AND INSTRUCTION IN THE MIDDLE GRADES

Henry Jay Becker

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The Johns Hopkins University

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The Center

The mission of the Center for Research on Elementary and Middle Schools is to produce useful knowledge about how elementary and middle schools can foster growth in students' learning and development, to develop and evaluate practical methods for improving the effectiveness of elementary and middle schools based on existing and new research findings, and to develop and evaluate specific strategies to help schools implement effective research-based school and classroom practices.

The Center conducts its research in three program areas: (1) Elementary Schools; (2) Middle Schools, and (3) School Improvement.

The Elementary School Program

This program works from a strong existing research base to develop, evaluate, and disseminate effective elementary school and classroom practices; synthesizes current knowledge; and analyzes survey and descriptive data to expand the knowledge base in effective elementary education.

The Middle School Program

This program's research links current knowledge about early adolescence as a stage of human development to school organization and classroom policies and practices for effective middle schools. The major task is to establish a research base to identify specific problem areas and promising practices in middle schools that will contribute to effective policy decisions and the development of effective school and classroom practices.

School Improvement Program

This program focuses on improving the organizational performance of schools in adopting and adapting innovations and developing school capacity for change.

This report, prepared by the Middle Schools Program, analyzes national survey data on middle grades schools to determine the content and skills that are taught to middle grades students, how their instuction is provided, and how the content, skills, and instruction are influenced by school, community, and student body characteristics.

Abstract

In the spring of 1988, the Johns Hopkins Center for Research on Elementary and Middle Schools (CREMS) conducted a national survey of principals in middle grades schools that include grade 7. Using the data from this survey, this report documents and analyzes the content and skills that middle grades students are taught, the instructional methods through which they are taught, and the influence on curriculum and instruction of school, community, and student body characteristics. The analyses find that school structure and location and the economic backgrounds of the school's students affect the kinds of courses and instruction provided to students in various ways.

The opportunities that students have to become competent and knowledgeable are largely determined by two things -- the content and skills they are taught; and how their instruction is provided. If students receive no instruction on such aspects of our culture as music, foreign language, or computer technology and if their classroom time is spent mainly listening to lectures and doing repetitive seatwork to learn isolated facts, many of them will leave school with little cultural understanding and an impoverished sense of what learning is like. It is particularly important that schools serving the middle grades pay careful attention to the what and the how of instructional practice, because early adolescents are developing long-term personal attitudes towards the role of education in their lives. The effects of narrow curricular structure and teaching approaches that emphasize memorization are likely to be especially harmful for these students.

How widespread are the problems of limited curricular exposure and over-routinized, passive, drill-oriented instruction? What are the curriculum and classroom instructional practices that most students actually experience in their middle grades education? We can address these questions using data from the Johns Hopkins University's National Survey of Middle Grades Practices. In our survey, principals of 1,753 schools serving 7th and 8th grade students described the courses offered to students and the proportion of students actually taking those courses, and estimated how frequently "typical" 7th grade teachers used instructional approaches such as having students do group projects in social studies or having them rewrite English essays after peer or teacher review.

Using a multivariate statistical framework, our research found that the curricular opportunities and classroom learning tasks that students experience depend partly on the characteristics of the school they attend -- the school's grade span, the size of its enrollment, and the numerical

adequacy of its staffing. But students' experiences also differ according to the type of the community in which they are schooled, the socio-economic characteristics of the families served by the school, and the student body's ethnic composition. This paper examines the extent to which these school, community, and student body characteristics affect students' opportunities for middle grades education.

Course Offerings

The courses that students take in school provide rough bounds for the "explicit curriculum" -- the manifest content of what students are taught. Although courses that have different titles may cover similar content, and identically titled courses may cover dissimilar content, the large variety of course names in itself indicates that significant differences exist in the experiences given to 7th and 8th grade students attending different types of schools.

We asked principals to report about three types of courses: instruction given in certain core academic subjects; courses offered in more peripheral but commonly taught practical and fine arts subjects, and exploratory "mini-course" experiences -- organized instruction in areas not generally covered in the standard curriculum and not necessarily given for a full year.

Academic Subjects

Our survey provides data about four specific academic course offerings -- each chosen to highlight a different aspect of middle grades curricula.

(1) *Skill Remediation or Maintenance*: a course in reading separate from but concurrent with a course in English;

(2) *Advancement for the Academically Proficient*: a course in algebra for 7th or 8th grade students;

(3) *Commitment to a Traditional Academic Emphasis*: two full years of science instruction

in the 7th and 8th grades; and

(4) *Innovation in an Academic Direction*: a full year of foreign language instruction, equivalent to high school level-one foreign language.

1. Reading. Many middle grades students come to their English classes severely below grade level in reading, and could clearly profit from supplementary academic time devoted to reading instruction and practice. Our national survey of principals found that, in fact, most middle grades schools do provide an additional course in reading separate from and concurrent with a course in English -- although 15% of middle grades schools do not. (See Table 1.) A majority of middle-grade schools provide that reading course to all or nearly all of their students, believing perhaps that most 7th graders can use more than one period per day devoted to reading. But another one-fourth of middle-grades schools provide this extra course specifically to a certain percentage of their students who need supplementary reading instruction. Overall, we estimate that between 55% and 60% of middle-grade students experience at least one explicit "reading" course during their 7th or 8th grades.

2. Algebra. The mathematics curriculum, much more so than the English, is sequentially organized and governed by a traditional allocation of explicit topics to specific *high school* grade levels -- algebra in the 9th grade, geometry in the 10th grade, and so on. However, many students have mastered (or quickly do master) the mathematics taught in 7th and 8th grade classes, because much of it is repetition and review from earlier grade levels. Most middle-grade schools (63%) offer algebra to at least *some* of their 7th (or more usually 8th) grade students. But algebra, more so than the other subjects investigated, tends to be offered selectively to students, based on their prior achievement. Only 35% of the schools provide algebra even to one-quarter of their students. In all, only about one-sixth of all students will have had algebra by the time they complete their 8th grade.

3. Science. Prior to *Sputnik*, science was not a major element in middle-grades curricula.

But that was 30 years ago. Today, two full years of science are offered to most or all students in more than 90% of the schools serving the middle grades. The differentials anticipated in this area are actually quite limited. Roughly 80% of all middle grades students take science courses in both their 7th and 8th grades.

4. Foreign Languages. In the middle grades, foreign languages tend to be taught only in an exploratory way. However, there is a good deal of evidence that children should be given formal instruction in foreign languages well before high school age. In our survey, we sought to learn how many schools serving the middle grades are giving a substantial introduction to foreign language learning to any of their students. We found that a majority of schools *do not* offer a full year of foreign language to any students. However, nearly 25% of schools do provide at least one-fourth of their 7th and 8th grade students with foreign language instruction. Overall, between 15% and 20% of all students obtain a year of foreign language in the middle grades.

In summary, about 80% of middle grades students receive two years of science and about 60% receive a separate course in reading, but fewer than 20% take algebra and fewer than 20% take a year of foreign language, with only one-third of middle grades schools offering a year of foreign language to any students at all.

Practical and Fine Arts (and other non-core curriculum areas)

For many decades, junior high schools, and now middle schools, have attempted to provide students with more than just basic academic instruction. Yet the pressures of fulfilling expectations for academic achievement and the manpower and organizational difficulties of arranging for competent instructors in many subject areas have sometimes interfered with schools' being able to provide each student with a substantial exposure to the many skills and experiences which they might find useful. These difficulties may be even greater today in the wake of mandated minimum competency testing in the basic skills.

In our survey, we measured the extent to which schools provided students with substantial instruction in six areas: art, typing or keyboarding, computer skills (besides keyboarding), physical education, industrial arts, and home economics. For all but physical education, the criterion was whether students received 30 or more class periods of instruction in the subject. That would be, for example, a six-week course meeting every school day, or a course meeting once each week for the full school year. For physical education, the criterion was whether the subject was given for two full years (at least three days per week), during the 7th and 8th grade. As with the academic subjects, principals reported an estimate of the portion of their 7th and 8th grade students who received the specified level of instruction in these subjects.

1. Physical education. Of the six subjects outside of the academic core that we asked about, the course experienced most often by 7th and 8th grade students was physical education. More than 80% of middle grades schools offered two years of "PE" to most or all of their students in these grades. For example, four times as many students take two years of PE as take a year of foreign language; three times as many take 120 hours of PE as take a 30-hour course in typing or keyboarding skills.

2. Art. Perhaps the most central "practical and fine arts" subject, art was offered to 7th or 8th graders in seven out of every eight schools. And a clear majority of schools made an art course mandatory at some point during the middle grades. Still, between 35% and 40% of students do not receive a 30-hour art course during these grades.

3-5. Industrial arts, home economics, and computer education. These three subjects -- the first two, very "traditional" middle grades courses, and the third a newcomer -- are distributed similarly in the middle grades. Each is offered to 7th or 8th grade students in roughly two-thirds of all middle-grade schools, and about 40% of all schools enable all or most students to take the subject for at least a 30-hour class. Overall, each of these subjects will have been taken by a majority of students completing the 8th grade (although substantially fewer students will have had *all* three subjects).

6. Typing or keyboarding. Historically the province of high school level business education teachers, typing is an instructional area undergoing some change as more and more computer education classes include keyboarding skills. A separate class in keyboarding, though, is less frequently offered than more general courses in "computer literacy," which may or may not include 30 hours of instruction in keyboarding skills. As reported by their principals, a minority of middle grades schools (40%) offer typing or keyboarding to their students; of those that do, nearly one-half enable all or most of their students to take such a course. Altogether, about 25% of students completing the 8th grade will have completed a 30-hour experience in typing or keyboarding during the previous two years.

Exploratory or Mini-Courses

One of the curricular innovations of the "middle school movement" has been an effort to encourage schools to provide brief experiences for students on special topics that do not require long sequences of lessons and learning. Often, these experiences may be offered as electives, enabling students to pick the subjects that most interest them; in other cases, all students are routed through the same series of exploratory or mini-courses. Mini-courses may be offered throughout the school year, during a special "activity period," or they may be offered only during a particular part of the year when time is set aside specifically for them.

A minority of middle-grade schools (39%) report offering mini-courses. And some of those schools provide mini-courses to only a portion of their students. Overall, only 30% of students have an exploratory or mini-course experience during their middle grades.

Many of the mini-courses listed by principals in our survey were brief versions of courses that other middle schools offer as full-year or one-semester activities -- for example, courses on computers, foreign languages, family life, or study skills. But many other experiences were in-depth examinations of special topics such as cartooning, the stock market, classical novels and movies, calligraphy, minority cultures, robotics, and so on. education. The mini-courses listed

are a mixture of core curricular, artistic, personal-social, and physical education subjects, and the offerings depend partly on the skills and talents of the teachers who happen to be present. However, school-level leadership can encourage staff members to build instructional modules from their own special interests and can mobilize expertise from parents and from the community at large.

Classroom Instructional Activities

Most research on teaching practices in elementary and secondary schools finds an overwhelming emphasis on basic skills and student memorization of facts (Goodlad, 1984). This seems to hold not only for the "basic skill" subjects of English/language arts and mathematics, but also for much of the instruction in science and social studies. In contrast, most recent commission reports from these disciplines (California State Department of Education, 1987; Carnegie Task Force, 1989), as well as scholars and leading professionals writing independently (Eccles & Midgely, 1989; Lipsitz, 1984), have urged that schools put greater emphasis on "active learning" and "higher-order thinking" tasks to help students learn to write better, to work more productively in group-task situations, and to learn how to learn. But even as teachers agree intellectually with these goals, many of them find it difficult to change individual lessons, student assignments, and general instructional practices -- changes that might redistribute the relative attention paid to coverage of factual content versus general intellectual competence.

English

The principals in our survey reinforce the idea that teachers emphasize routine skill building activities. In English, 52% of the principals reported that their "typical" teacher assigned drill and practice activities in almost every lesson compared to only 1% who gave daily writing assignments of at least a page in length. (See Table 2.) Almost all principals said that their English teachers gave drill assignments at least weekly (96%), but fewer than one-half of the principals (42%) said that their teachers had students edit and rewrite essays on a weekly basis. And

drill-and-practice activities were, overall, about twice as frequent as reading and discussion about the content of the reading materials.

Mathematics

Drill was even more dominant in mathematics. Seventy-eight percent of principals reported that their typical math teacher gave daily drills on computation, but only 25% reported that math teachers emphasized problem-solving and applications daily. Students used calculators in mathematics infrequently, with as many principals (43%) saying that their math teachers *rarely or never* had students use calculators as reported that teachers have students use calculators weekly or more often. Thus having students learn to do calculations in order to solve problems that involve numerical relationships remains the major goal of math instruction, in spite of the easy availability of tools to do this work.

Science

Memorizing the "facts" that scientific investigation has discovered consumes much more instructional time than does engaging in learning activities that would teach students how to learn like scientists. A majority of principals (57%) report that their typical science teacher teaches basic science facts on a daily basis, but only a third indicate that their typical science teacher includes discussions of scientific methods as part of nearly every lesson. Still fewer teachers have students do hands-on laboratory work (10%), and fewer still use computer or video technology to provide scientific explanations (3% daily; 30% weekly).

Social Studies

Daily drills are not so frequent in social studies (only 29% of the principals reported that their typical teacher gave daily drills on important names, dates, and facts of history). Still, fact-learning activities were more commonly reported than were discussions of historical controversies and current events (80% weekly or daily vs. 68%).

Two other social studies learning activities occurred much less frequently than either fact drills or recitations about history. Student *writing* in social studies classes and group projects were regularly assigned by typical teachers in only a minority of schools. For each of these ways of learning social studies, roughly one-third of principals reported them occurring at least weekly in a typical teacher's class; another third reported them occurring "monthly," and one-third said each occurred only occasionally or not at all.

Diversity

Despite the tendency toward fact learning and drills, a modest proportion of principals (about one-fourth) report that their teachers pay at least as much attention to higher-order competencies and active learning tasks. Some principals reported that their English teachers assigned more writing, editing, and rewriting tasks than drills; that their science teachers gave lab assignments or emphasized scientific methods of discovery more than science facts; that their math teachers had students use calculators or emphasized problem-solving and applications of math more than math computation; and that their social studies teachers had students discuss controversial issues or current events or work on group projects more often than they had them do drills for learning historical facts, names, and dates. Overall, 21% of principals reported that teachers used these *non-drill* activities on a daily basis in more subjects than used drill activities. But a school-wide instructional emphasis on higher-order thinking and active learning modes is still the exception more often than the rule in middle grades schools in this country.

Schools exhibit distinct patterns in the classroom instructional activities that their teachers employ. Of the sixteen instructional approaches analyzed from our survey (four approaches in each of four subjects), four approaches reflect an emphasis on factual recall and twelve reflect a broader approach to schooling. The intercorrelations among the four "drill-oriented" practices are all positive -- ranging from r=.2 to r=.37. This means that principals who report more frequent drill-and-practice activities in math or English also generally report a greater emphasis on fact learning in science and social studies. The other twelve practices reflect attention to more

cognitively complex learning, and nearly all of the 66 intercorrelations among those teaching activities are positive as well, averaging r=.28 and with most coefficients falling between .20 and .36.

Differences by School Characteristics

Our analyses of our national survey indicate that two aspects of the schooling environment have a modest but significant bearing on the courses that a school's students take and on the classroom instructional practices to which they are exposed: (1) school characteristics, including the grade span of the school, the size of its enrollment, and the adequacy of its staffing and (2) the community and family setting in which students are served, including the size of the community in which the school is located and the socio-economic characteristics of the students that attend it.

Grade organization

Schools serving middle grades encompass a wide range of grade spans, from those that serve only grades 7 and 8 to those that serve all grades from K to 12. In this analysis, schools serving middle grades are grouped into three types: those that also serve younger students (e.g., K-8, K-12, 4-8); those whose lowest grade level is 5 or 6 (e.g., 5-8, 6-8); and those in which 7th is the lowest grade level (e.g., 7-8, 7-9, and 7-12). We refer to these three types of schools as "K+," "middle schools," and "7+." Also, within the "7+" category, we examine differences between traditional junior high schools (and junior-senior combinations) and school which serve only grades 7 and 8.

The largest difference among these several types of schools occurred for K+ schools compared to middle and 7+ schools. K+ schools typically provide fewer opportunities for students to take elective subjects, including home economics, industrial arts, and typing or keyboarding. In the middle and 7+ schools in our study, more than half of the students had industrial arts (at least 30 hours) during their 7th or 8th grades. But only one-third of the students in K+ schools had

industrial arts during their 7th or 8th grades. Similarly, 8th grade students in K+ schools were about 60% as likely to have had a typing or keyboarding course or a home economics course in the past two years as students completing the 8th grade in middle or junior high schools.

Exploratory or mini-courses were also more prevalent in middle and 7+ schools than in K+'s. Forty-six percent (46%) of the middle and 7+ schools provided mini-courses to at least some students compared to 28% of the K+ schools.

K+ schools also differed from the other two types of schools in the activities and instructional practices that teachers employed, according to their principals. Generally, 7th and 8th grade teachers in K+ schools used drill activities more and activities emphasizing higher-order thinking less than in middle or 7+ schools. The differences were particularly great in English instruction. More than two-thirds of the K+ principals, but only 42% of the middle and 7+ principals, reported that their average 7th grade teachers used daily practice drills on language basics. K+ principals also reported less use of computers and videos in science, less frequent assignment of essays in English, and less frequent discussion of controversial issues in social studies.

On the other hand, 34% of K+ principals reported that their teachers employed peer- or cross-grade tutoring weekly or more frequently in 7th grade mathematics, compared to 21% of principals of middle and 7+ schools.

Middle schools (schools starting with grades 5 or 6) differed significantly from 7-8 schools and junior highs in only a few curricular and classroom instructional activities. The major differences were in typing or keyboarding opportunities and in the provision of a separate course in reading.

The differences are greatest in reading instruction. Nearly three-quarters of middle schools give a majority of their students a separate reading course and 90% provide that course to at least some of their students. These proportions are similar to what K+ schools provide for their 7th and 8th grade students. In contrast, in only 53% of junior high schools do a majority of students

have a reading course, and only 74% of junior highs offer a reading course at all. Seven-eight (7-8) schools fall between middle and junior highs in their provision of reading courses.

Middle schools and 7+ schools may differ in their provision of a separate reading course because a larger percentage of the staff in middle schools is composed of elementary-certified teachers (52% vs. 24%). However, many middle schools implement reading courses as a matter of policy. If we compare a middle school and a K+ school that have the same percentage of elementary-certified teachers on their staffs, we find that the middle school provides, on average, at least as many of its students with reading instruction.

Apart from reading and typing instruction, most of our indicators of curriculum exposure and classroom teaching practices show only modest differences between middle schools, 7-8 schools, and junior high schools. For example, 64% of both middle schools and junior highs offer industrial arts experiences to a majority of their students. Science classes, in particular, seem to contain a similar mix of activities in middle schools and junior highs. Daily fact-learning, weekly science laboratory assignments, and monthly use of computers or video were reported by nearly the same percentage of middle school principals and junior high principals.

Still, the survey results do indicate in general that middle school teachers provide a somewhat more inquiry-oriented, intellectually focused approach in their classes than do teachers in 7+ schools. More middle school principals than junior high principals reported that their typical science teachers emphasized scientific methods of discovery on a daily basis (37% vs. 27%). Similarly, more middle school principals reported that their social studies classes included daily discussions of controversial issues (22% vs. 16% for junior highs), that students were assigned essays weekly (33% vs. 25%), and that English teachers assigned more frequent editing and rewriting assignments (48% vs. 42%, doing this weekly). But other differences in reported classroom instructional practices between middle schools, 7-8 schools, and junior highs were smaller. Overall, the differences in instructional practices *among* schools within any category (e.g., among K+ schools) are far greater than the differences between representative schools of each

category.

In summary, the largest difference in curriculum and instructional practice by school grade span was between the K+ schools and the schools dedicated to early adolescents -- middle schools, junior highs, and 7-8's. Within the latter group, some distinctive patterns of curriculum and instruction do prevail -- particularly in the provision of reading instruction and in the use of a somewhat more active teaching style. But these differences are not as extensive or clearcut as those between K+ and the other grade span organizations.

School and class size

The number of students attending the school or assigned to a teacher for a single class period may affect the kinds of courses the school provides to students or the kinds of activities and assignments that teachers make. We investigated three aspects of size -- the total school enrollment, the number of students per grade level, and the overall student-to-teacher ratio at the school. (We did not have explicit data on "average class size.")

Although "students per grade level" did not affect student curriculum and classroom experiences, the other two measures of institutional magnitude were related to our outcome variables.

Schools that have larger enrollments provide more computer and keyboarding classes and mini-course experiences than do smaller schools. Exploratory mini-courses and typing or keyboarding courses exist for 7th or 8th graders in about one-half of all schools with more than 600 students, but only in one-quarter of the schools with fewer than 250 students. Computer classes are available in over 80% of these larger middle grades schools but in just 50% of the smaller ones.

High student-teacher ratios (suggestive of larger class sizes) limit the ability of schools to provide all or most of their students with more traditional electives, such as industrial arts, home

economics, and art, as well as more academic electives such as foreign languages. Comparing schools that have more than 20 students per teacher with schools having fewer than 15 students per teacher, we find that students in schools with the less favorable ratios are only three-quarters as likely to have an art class, 60% as likely to have an industrial arts or home economics experience, and only one-third as likely to have a foreign language class.

Our analyses also found a result that is more difficult to interpret. Principals in schools that have smaller student-teacher ratios report more drill-and-practice activities among their teachers. These schools presumably have smaller class sizes, which might be more logically assumed to produce more attention to active learning modes or activities focusing on higher order competencies. But this relationship held up even when controls were applied on school grade span and community characteristics.

Differences by School Environments

Community context

Our survey identified several ways in which community size was related to the kind of schooling provided to middle grades students. The most consistent finding is that students in large cities have less diverse curriculum opportunities compared to students in schools in other types of communities. Big-city eighth graders were less likely than other students to have had six types of courses: industrial arts, home economics, physical education, science, art, and minicourses. The specific differences between big-city schools and others were relatively small (about eight percentage points, on average). But across subjects, the differences add up. One-half of all eighth grade students in a city school who did not experience any of these six courses would have had at least one of them had they attended a suburban or small town school.

On the other hand, schools in large cities and schools in those cities' suburbs both offered more foreign language experiences to their middle grades students than did schools in smaller areas. One-fourth of all city and suburban 8th grade students have experienced a full year of

foreign language instruction compared to only 10% of students living outside of metropolitan areas. And city 8th graders have had about as much computer experience as suburban students, whereas opportunities for students in small towns and rural areas have lagged behind in that subject.

Students from the suburbs of large metropolitan areas have generally had more elective experiences than students elsewhere. They are especially more likely to have had a typing or keyboarding course (one-third, compared to fewer than one-fourth of 8th grade students elsewhere). They also lead other students in industrial arts experiences and home economics and art classes. Differences between suburbs and city are the most pronounced, even though both are in the same metropolitan area. For example, 60% of suburban eighth graders will have had industrial arts compared to only about 45% of city eighth graders.

Whereas schools in large cities differ most from other schools in terms of curriculum offerings, the small town and rural schools differ in the emphases that teachers give to different aspects of their subject, particularly in English classes. Schools outside of metropolitan areas assign much less written work than do middle grades schools elsewhere. English teachers in small town and rural schools are only two-thirds as likely to assign weekly essays as in other schools (44% vs. 62%). And they assign editing and re-writing activities much less often (32% vs. 51% who assign such work weekly). Social studies teachers in the same schools also assign written essays less frequently. And although rural schools are disproportionately "K+" schools -- which also emphasize language mechanics drills over written essays -- when we look only at schools with the same grade spans, small town and rural schools continue to show English teachers giving less frequent writing and editing assignments than in metropolitan areas.

Instead, they assign drill work more often. Nearly 60% of the principals in small town and rural areas reported that their English teachers gave daily assignments on vocabulary, grammar, and other language mechanics. Only 40% of the principals in suburban schools gave that response. A greater use of drill work is also reported to occur in science and, to some degree, in

math classes in small town and rural schools.

These results suggest that the kinds of schools within a community are determined partly by economic factors (e.g., poorer city schools may not be able to afford as much diversity) and partly from cultural beliefs that dominate in an area. Rural, suburban, and urban schools reflect varying beliefs of community residents about what subjects are important in a school curriculum and what classroom activities constitute appropriate ways to study a subject. Our examination of the community context of schools suggests that both financial and cultural factors may be responsible for differences observed.

Student enrollee characteristics: ethnicity

The cultural backgrounds and educational deficits and advantages that students bring to school affect the curricula that their schools provide, and these student inputs also influence what their teachers emphasize in their teaching of a subject. In this survey, we looked at two aspects of a school's student characteristics -- the principal's estimate of the proportion of students having parents who worked at professional or managerial jobs and the proportion of students who were from racial minority groups. Both these aspects were related to curriculum experiences and instructional emphases.

Racially mixed or predominantly minority schools (schools that had at least a 33% minority population) were characterized by a less rich array of curricular alternatives than other schools. Somewhat fewer students in mixed/minority schools received two years of science instruction than did students in other schools (77% vs. 83%), and middle grades students in mixed or minority schools had fewer mini-course experiences than did students in schools that had few (under ten percent) minority students (24% vs. 35%).

But the mixed/minority schools and schools with almost no minority students differed most in their students' experiences with traditional elective subjects. Students were 15 to 20 percent less likely to have substantial experiences in art, industrial arts, and home economics in 7th or

8th grades if they attended a racially mixed or predominantly minority school. For example, 55% of students in mixed/minority schools had an art class, compared to 71% in homogeneously white schools.

Racially mixed and predominantly minority schools are more common in large cities, in which students also receive these courses less often. But even within the four community location categories that we used ("big city," "big suburb," "smaller metropolitan areas," and "small town and rural"), students in schools that had at least one-third minority students were less likely to have had a course in these subjects than students in schools with few minority students.

In contrast, principals' reports of typical teacher behavior did not indicate that mixed/minority schools suffer from a surfeit of drill-and-practice and other fact-oriented activities. In fact, a school's minority percentage is positively associated with more frequent use of writing activities and intellectual debate -- essays and editing/rewriting assignments in English classes and written work and discussions of controversial issues in social studies. This finding remains even when correlated factors such as school grade span and community size are held constant. Instead, schools with very few minority students paid less frequent attention to written work in English, peer tutoring and problem-solving in math, debate in social studies, and discovery-oriented activities in science.

Student enrollee characteristics: family economic background

Of all the factors that correlate with differences in curricular and classroom experiences between students attending different types of schools, the most powerful was the family economic background of each school's students. Principals were asked to estimate the proportion of students' families that included a professional or managerial worker. These estimates ranged from near-zero to well over 50%.

We divided the data on family economic status into roughly equal thirds, dividing the schools into groups where "under 10%," "between 10% and 19%" and "20% or over" of the

families were estimated to include a professional or managerial worker. We refer to these schools as "working class," "mixed class," and "middle class" schools respectively, although the data are estimates only of the proportion of families in *upper-middle-class* occupations. As a result of the rather imprecise measurement of socio-economic status, the observed differences between these categories of schools are definitely *underestimates*.

The economic background of attending students made the most difference in academic coursework. Half again as many students in middle-class schools had a course in algebra in the 8th grade as in working-class schools (20% vs. 13%) and more than twice as many had a year of foreign language (28% vs. 11%). But students in middle-class schools were also more likely to have an art class, a typing or keyboarding class, a computer class, an industrial arts class, a home economics class, and a mini-course experience. Of the subjects examined, only science, reading, and physical education opportunities did not differ among these three types of schools.

In addition, many of the aspects of classroom instructional practice that indicate attention to higher-order thinking were reported to be more prevalent at middle-class schools than at working-class schools. The three largest differences in classroom practice between middle- and working-class schools were for weekly editing/re-writing assignments in English (55% vs. 37%), weekly science laboratory work (76% vs. 57%), and emphasis on scientific methods of discovery (45% vs. 28%). Other non-drill activities (such as a literature focus in English or discussion of controversial ideas in social studies) also were reported more often by middle-class schools, but the differences were smaller.

An emphasis on learning through group activities seemed to be more common in mixed-class schools than in schools with either more or fewer students from middle-class families. The mixed-class schools reported more frequent use of group projects in social studies, peer tutoring in mathematics, and peer review of English essays -- all three suggesting a more social approach to learning than is traditional.

Summary and Discussion

In the last decade, research on early adolescent development and learning has led to a widespread conviction that schools should provide middle grades students with (1) significant exposure to a wider range of subjects, (2) more cognitively demanding tasks, and (3) a greater variety of active learning modes in which they do more than listen, calculate, memorize, and take notes.

The funding, organization, and staffing of most schools in this country mitigate against these changes. Indeed, pressures to fulfill academic curriculum requirements and produce higher test scores push schools in opposite directions. Yet many schools do provide curricular and instructional variety. Depending on the kind of school a student attends, he or she may encounter curricular diversity or classroom instruction that focuses on active learning and higher-order cognition. Different consequences follow from different conditions.

In particular, students who experience their middle grades in an elementary school context have fewer curricular opportunities and have teachers who emphasize rote learning rather than higher-order cognition. Some research, however, suggests that students from lower socio-economic backgrounds may obtain higher test scores in such settings (Becker, 1987).

Students in schools that have inadequate funds for full staffing tend to have limited elective experiences, both in academic areas (such as foreign languages) and in the practical and fine arts. Students in smaller schools tend not to receive computer and typing/keyboarding courses.

Students in schools located in large cities (which typically also have limited funding) have the least curricular diversity of any population. Their lack of opportunities extends not only to electives but also to subjects that are nearly universally provided in other settings, such as science and physical education. But students in big-city schools (and even more so, students in suburban schools) profit from the greater cosmopolitanization of metropolitan communities. They receive more instruction in foreign languages and computer education, have more opportunities to develop their writing skills, and generally have more intellectual classroom experiences than

their peers in small cities and towns.

But as much as school structure and location, the economic backgrounds of a school's clientele affect the kinds of courses that the school provides to students and the kinds of classroom experiences that they have. Schools with substantial percentages of upper-middle-class families provide more students with academic opportunities such as algebra and foreign languages, more electives of all types, and a more intellectually rich classroom life characterized by more writing and a greater attention to scientific methods of discovery. Social modes of learning characterize classrooms in middle-class schools, while an emphasis on drill and fact learning -- although strong everywhere -- is particularly evident in working-class schools.

Are these distinctions in course experiences and classroom practice useful? It may be that the best way to organize instruction to meet student needs in some middle-grades schools is not the best way to meet the needs of students attending other middle-grades schools. But it is more likely that differences in curriculum and classroom practice derive mainly from differences in schools' financial resources, from differences in their ability to recruit talented teachers, and from the fact that certain courses and approaches to teaching are more difficult to implement in some settings than in others. If so, we have corresponding responsibilities: (1) to equalize resources among schools, (2) to enable all schools to recruit highly capable teachers, and (3) to develop routines and programs that allow schools in difficult settings to implement the instructional practices and curricula that are as valuable for them as for schools in more privileged circumstances.

References

Becker, H. J. (1987). Addressing the needs of different groups of early adolescents: Effects of varying school and classroom organizational practices on students from different social backgrounds and abilities. Report No. 16, The Johns Hopkins University Center for Research on Elementary and Middle Schools, Baltimore MD.

California State Department of Education (1987). *Caught in the middle: Educational reform for young adolescents in California public schools.* Sacramento: Author.

Carnegie Task Force on the Education of Young Adolescents (1989). *Turning points: Preparing American youth for the 21st century.* New York: Carnegie Council on Adolescent Development.

Eccles, J. S. & C. Midgely (1989). Stage environment fit: Developmentally appropriate classrooms for early adolescents. In R. Ames & C. Ames (eds) *Research on Motivation in Education (Vol. 3).* New York: Academic Press.

Goodlad, J. I. (1984). *A place called school: Prospects for the future.* New York: McGraw-Hill.

Lipsitz, J. (1984). *Successful schools for young adolescents.* New Brunswick: Transaction Books.

Table 1. Grade 7 and 8 Curriculum, National Sample of Schools

(selected course experiences)

Selected Course Experience Criteria	Schools offering (percent)	Schools giving to all or most students (%)	Est. percent of Students Experiencing
Academic			
Reading--a course separate from but concurrent with English	85%	61%	58%
Algebra--a full year	63	7	16
Science--two full years	94	92	81
Foreign Language--a full year	36	10	18
Practical and Fine Arts			
Physical Educ.--3 days/wk., both years	91%	84%	78%
Art--30 or more class periods	87	61	64
Computer education--30+ periods	71	39	51
Industrial Arts--30+ periods	67	39	53
Home economics--30+ periods	66	37	51
Typing & keyboarding--30+ periods	40	19	27
Exploratory Curriculum			
Mini-Courses in a variety of subjects	39%	23%	29%

Table 2. Principal's Reports of Activities in a "Typical" Teacher's Classroom

	Daily	Weekly	Monthly	Occasionally or Never
English				
Drill and practice on language basics (vocabulary, punctuation, grammar)	52%	44%	4%	0%
Teach content and ideas in literature	18	56	20	6
Have students write an essay or report at least one page long	1	52	36	11
Have students edit, rewrite, and resubmit their essary after peer or teacher review	3	39	41	17
Math				
Drill and practice math computation	78%	19%	2%	1%
Emphasize creative problem solving and math applications	25	48	17	10
Have students use calculators to obtain answers	18	25	15	42
Organize peer tutoring or cross-grade tutoring	6	20	12	62
Science				
Teach, drill, and practice basic science facts	57%	36%	4%	3%
Emphasize scientific methods of discovery	33	41	20	6
Conduct hands-on laboratory work	10	57	21	12
Use computer or video to provide scientific explanations	3	27	30	40
Social Studies				
Drill and practice important names, dates, and facts of history	29%	51%	12%	8%
Discuss controversial issues and debate ideas of history and current events	21	46	17	16
Have students work on joint or group projects	2	29	37	32
Have students write at least one page of ideas on a topic as an essay	1	28	36	35